

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 January 2002 (31.01.2002)

PCT

(10) International Publication Number
WO 02/08708 A1

(51) International Patent Classification⁷: **G01K 7/01**

Krishnamoorthy [IN/SG]; Blk 244 Lor. Chuan, #19-05
Chuan Park, Singapore 556745 (SG).

(21) International Application Number: PCT/SG00/00108

(74) Agent: **DONALDSON & BURKINSHAW**; P.O. Box
3667, Singapore 905667 (SG).

(22) International Filing Date: 26 July 2000 (26.07.2000)

(25) Filing Language: English

(81) Designated States (*national*): JP, SG, US.

(26) Publication Language: English

(84) Designated States (*regional*): European patent (AT, BE,
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE).

(71) Applicant (*for all designated States except US*): **STMI-
CROELECTRONICS ASIA PACIFIC PTE LTD**
[SG/SG]; 28 Ang Mo Kio Industrial Park 2, Singapore
569508 (SG).

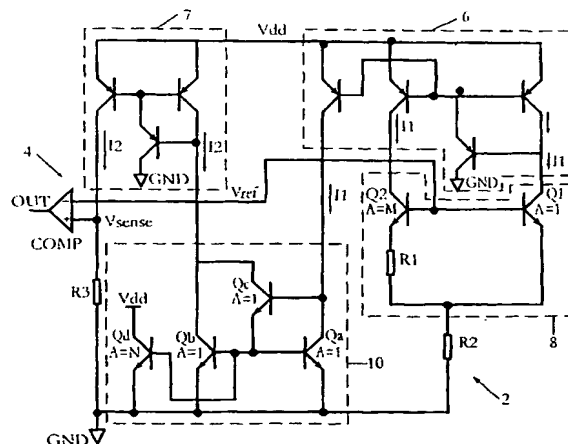
Published:
— with international search report

(72) Inventor; and

(75) Inventor/Applicant (*for US only*): **RAVISHANKER,**

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A THERMAL SENSOR CIRCUIT



(57) Abstract: The present invention provides a thermal sensor circuit for sensing the temperature of an integrated circuit chip, the thermal sensor circuit including: an output comparator for comparing a reference voltage, V_{ref} , with a sensed voltage, V_{sense} , the sensed voltage being measured over a sensing resistor relative to the ground potential of the circuit; a first circuit to which a reference voltage line is connected to measure V_{ref} ; a first current mirror providing a first current input to the first circuit and to a compensation circuit; and second current mirror providing a second current input to the compensation circuit and to the sensing resistor. The compensation circuit provides a current gain, defined as the ratio of the second current input to the first current input, for compensating for variations in V_{ref} due to variations of the characteristics of the thermal sensing circuit arising from a manufacturing process of an integrated circuit chip on which the thermal sensor circuit is made by adjusting the second current input in dependence on the variations of the characteristics to thereby vary V_{sense} along with V_{ref} .